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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,797	10/28/2003	Santanu Basu	03-0192 (BOE 0443 PUS)	2796
27256	7590	06/14/2005	EXAMINER	
ARTZ & ARTZ, P.C. 28333 TELEGRAPH RD. SUITE 250 SOUTHFIELD, MI 48034			PRITCHETT, JOSHUA L	
			ART UNIT	PAPER NUMBER
			2872	

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/605,797	Applicant(s) BASU, SANTANU	
	Examiner Joshua L. Pritchett	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 13-17 and 33-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 18-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is in response to Election filed April 19, 2005. Applicant elected claims 18-32 with traverse, however the applicant provided no arguments. Therefore, the election will be treated as an election without traverse. Claims 1-12 were previously indicated as generic. Claims 1-12 and 18-32 will be examined.

Election/Restrictions

Applicant's election of claims 18-32 in the reply filed on April 19, 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 1-12 and 18-32 will be examined.

Claim Objections

Claims 18-32 are objected to because of the following informalities:

Regarding claims 18 and 30, the claim states "an optional tertiary mirror." The examiner has interpreted this limitation to mean that the tertiary mirror does may be eliminated as part of the telescope without effecting the function of the telescope. Therefore the examiner has chosen to eliminate the tertiary mirror from the telescope when examining the claims. If the applicant wishes to pursue the "optional" nature of the tertiary mirror the examiner suggests removing the

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limitation from the claim and adding a dependent claim that includes a tertiary mirror. If the applicant wishes to pursue a tertiary mirror that is essential to the system the examiner suggests removing the term "optional" from the claim language.

Regarding claims 24 and 28, the claim states "an optional front grapple fixture" and "an optional rear grapple fixture." These limitations have been treated in the same manner as the "optional" limitations in claims 18 and 30.

The remaining claims are dependent from claims 18 and 30 and are objected to for the same reasons.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6-12, 18-20, 22 and 24-32 rejected under 35 U.S.C. 103(a) as being unpatentable over Hugenell (US 5,157,556).

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Regarding claims 1, 18 and 30, Hugenell teaches an optical structures including an optical beam path forming a plurality of interlocking modular segments (9), each of the plurality of interlocking modular segments comprising a plurality of interlocking attachments (12 and 18) and a plurality of members (21), wherein each of the plurality of interlocking attachments is coupled to at least one of the plurality of members and wherein each of the plurality of members is coupled to at least one of the plurality of interlocking attachments (Fig. 4; col. 5 lines 27-35); forming a modular mirror backing structure (16) from the plurality of interlocking modular segments; coupling the modular mirror backing to the foundation (Fig. 4); coupling a plurality of modular segmented optics one at a time to the modular mirror backing structure to form a primary mirror having a central hole (19; Fig. 1); and coupling a secondary mirror to the modular mirror backing structure, wherein the secondary mirror is operatively coupled to the primary mirror and is operatively coupled through the central hole (col. 1 lines 25-26). Hugenell teaches a Cassegrain telescope system which couples a secondary mirror in the claimed manner to a primary mirror. Hugenell lacks reference to the use of a satellite. Hugenell does teach the use of the telescope in space (col. 2 lines 10-11). It is extremely well known in the art to have telescopes used in space attached to satellites. Official Notice is taken. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the telescope of Hugenell attached to a satellite for the purpose of viewing a planet from an orbiting position.

Regarding claims 2, 9, 11, 24 and 31, Hugenell teaches forming a plurality of modular segmented optics wherein each of the plurality of modular segmented optics comprises a front reflecting surface, a backside, a plurality of side surfaces defined by the front reflecting surface

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and the back side (Fig. 2), a flexible center attachment (17) coupled to the backside (Fig. 4), a plurality of actuator attachments (14 and 15) coupled to the backside (Fig. 4), coupling the flexible center attachment of a first one of the plurality of modular segments to a top region of the interlocking attachments (Fig. 4), and coupling the plurality of actuators attachments to one of the plurality of modular segmented optics to a respective top region of another of the interlocking attachments (Figs. 2 and 4), repeating the coupling steps, wherein a first side surface of the first one of the plurality of modular segmented optics substantially abuts an adjacent side surface of the adjacent one of the plurality of modular segmented optics and such that the front reflecting surface of the first one of the plurality of modular segmented optics forms a continuous surface with the front reflecting surface of the adjacent one of the plurality of modular segmented optics (Figs. 1 and 4; col. 5 lines 27-43).

Regarding claims 3 and 20, Hugenell teaches forming a modular mirror backing structure from the plurality of interlocking modular segments comprises coupling a first end of one of the plurality of members of one of the plurality of interlocking modular segments within a first side slot of one of the plurality of interlocking modular segments (Fig. 1). Fig. 1 shows that except for opening 19 there are not gaps between the modular segmented optics. Hugenell further teaches introducing a first end of another one of the plurality of members of the one of the plurality of interlocking modular segments within a first side slot of a third one of the plurality of interlocking modular segments (Figs. 3 and 4; col. 5 lines 27-35).

Regarding claims 4, 8, 10 and 19, Hugenell teaches providing a plurality of interlocking attachments, each of the plurality of interlocking attachments having a top region (18) and a plurality of side slots (12); providing a plurality of members (21) having a first end and a second

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end (Fig. 2); introducing a first end of one of the plurality of members within a first side slot of one of the plurality of interlocking attachments (Fig. 4); introducing a second end of one of the plurality of members within a first side slot of a second one of the plurality of interlocking attachments (Fig. 4) and introducing a first end of another of the plurality of members within a second side slot of the first one of the plurality of interlocking attachments (col. 5 lines 27-35).

Regarding claims 6, 7 and 22, Hugenell teaches introducing the outermost end of the plurality of members defining the outer periphery within a corresponding inner side slot of an edge truss (1-8; Fig. 1).

Regarding claims 12 and 29, Hugenell teaches coupling the protruding region with a top surface of the at least one interlocking attachment such that each of the arms coupled over a respective one of the plurality of actuator elements is seated onto at least one of the plurality of members (Fig. 4).

Regarding claim 25, Hugenell teaches repeating the coupling procedure for a plurality of modular segmented optics (col. 5 lines 27-43).

Regarding claims 26 and 27, Hugenell teaches the claimed invention except for automating the assembly procedure of the modular segmented optics. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a machine perform the assembly of the modular segmented optics, since it have been held that broadly providing a mechanical or automatic means to replace manual activity which accomplishes the same result involves only routine skill in the art. One would have been motivated to automate the assembly process in order to allow the mirror to be assembled in space without the use of an astronaut.

Regarding claim 28, Hugenell teaches forming a plurality of modular segmented optics wherein each of the plurality of modular segmented optics comprises a front reflecting surface, a backside, a plurality of side surfaces defined by the front reflecting surface and the back side (Fig. 2), a flexible center attachment (17) coupled to the backside (Fig. 4), a plurality of actuator attachments (14 and 15) coupled to the backside (Fig. 4), providing a plurality of multi-arm guides (13) wherein each of the plurality of multi-arm guides comprises a central hub having an inlet region and a protruding region and a plurality of arms (12) extending radially from the central hub (Fig. 3); introducing the center attachment of one of the plurality of multi-arm guides within an inlet region of a multi-arm guide such that the plurality of arms are coupled over a respective one of the plurality of actuator attachments (Fig. 4); coupling the multi-arm guide of a first one of the plurality of modular segmented optics to a top region of one of the interlocking attachments (Fig. 4); repeating the coupling steps, wherein a first side surface of the first one of the plurality of modular segmented optics substantially abuts an adjacent side surface of the adjacent one of the plurality of modular segmented optics and such that the front reflecting surface of the first one of the plurality of modular segmented optics forms a continuous surface with the front reflecting surface of the adjacent one of the plurality of modular segmented optics (Figs. 1 and 4; col. 5 lines 27-43).

Regarding claim 32, Hugenell teaches the one of the integrated modular segments is coupled to another of the integrated modular segments using an external coupler (Figs. 1 and 4).

Claims 5, 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hugenell (US 5,157,556) in view of Callender (US H783).

Hugenell teaches the invention as claimed but lacks specifics about the secondary mirror. Callender teaches a Cassegrain telescope coupling the secondary mirror the mirror backing structure comprising providing at least one support connector (21), each of the at least one support connectors having an inner end and an outer end (Fig. 1); coupling an outer end of each of the at least one support connector to an outer side surface of the secondary mirror (13; Fig. 1); coupling an inner end of each of the at least one support connector to a respective attachment defining an outer periphery of the modular mirror backing (20; Fig. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the Hugenell invention include the secondary mirror coupling as taught by Callender for the purpose of precisely securing the secondary mirror to accept light passing through the central hole of the telescope.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

White (US 5,054,466) shows an astronaut assembling a modular mirror in space around an orbiting space shuttle (Fig. 8).

Sobczak (US 4,457,297) teaches a modular mirror assembly with interlocking attachments (Figs. 3 and 4).

Gillard (US 5,200,758) teaches a modular mirror assembly with interlocking attachments (Figs. 1 and 2).



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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua L. Pritchett whose telephone number is 571-272-2318. The examiner can normally be reached on Monday - Friday 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A. Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JLP



DREW A. DUNN
SUPERVISORY PATENT EXAMINER